

CLAIMS

1. A method of vapor phase epitaxial deposition of silicon on a silicon substrate including areas containing dopants at high concentration among which is arsenic, while avoiding an autodoping of the epitaxial layer by arsenic, including the steps of:

5 a) performing a first thin epitaxial deposition;

b) performing an anneal;

the conditions and the duration of the first epitaxial deposition and of the anneal being such that the arsenic diffusion length is much lower than the thickness of the layer formed during the first deposition; and

10 c) performing a second epitaxial deposition for a chosen duration to obtain a desired total thickness.

2. The method of claim 1, wherein the first epitaxial deposition is preceded by an initial anneal step.

15 3. The method of claim 1, wherein the first epitaxial deposition is performed at a temperature on the order of 1100°C and the second epitaxial deposition is performed at a temperature on the order of 1050°C.

20 4. The method of claim 3, wherein the first deposition is pursued for a duration sufficient to obtain a thickness on the order of 40 to 60 nanometers.

5. The method of claim 1, wherein the steps of anneal without epitaxy are performed in the presence of hydrogen.

25 6. The method of claim 1, wherein, during steps a) and b), the operating parameters of the epitaxy reactor are chosen to be outside the usual ranges imposed for a homogenous epitaxial growth.

30 7. The method of claim 6, wherein the flow of carrier gas is increased with respect to usual conditions.

8. The method of claim 1, wherein the epitaxial depositions are performed in presence of an arsenic source.

9. The method of claim 1, wherein step b) is performed in presence of an arsenic source.

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